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## SCIENCE:

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## THE PATENT OFFICE BUILDING.

WE have recently referred to the condition of the United States Patent Office as revealed by the reports made at the meetings of the Association of Inventors and Manufacturers. It will be remembered that it was stated that either a new and much larger building is required for the work of that department of the Government, or a great extension of the present building and quarters. Every commissioner of patents for many years past has endeavored to bring this matter before Congress in such manner as to secure some relief, but without avail; and the condition of things in the building has now become, in consequence of the supineness of those responsible for it, as testified by the speakers in the discussion in the Senate reported in part below, something shameful and almost indescribable. It will be remembered also that the Patent Office building was erected many years ago, and especially for its present uses, at a cost of about \$3,000,000, all furnished by the inventors of the country; but it is now so utterly inadequate to its work that clerks and other officers in the office are actually in danger of asphyxiation. But this is not all; this building, built with the money of inventors thus taxed for the privilege of making this country the most prosperous and wealthy on the globe, money contributed by poor inventors usually, is not now even permitted to be appropriated to the use for which it was constructed or the purpose to which it was dedicated; but the Interior Department, organized since the formation of the Patent Office, has been permitted to enter its "camel's nose" into this tent, and has now succeeded in getting so much of its body in that it actually dispossesses the rightful proprietors, and it has even been suggested by at least one secretary of the interior that the Patent Office be dispossessed entirely.

The Patent Office rightfully owns the building, which is paid for out of its own earnings at a cost of \$3,000,000, and the accumulations of inventors' money in the treasury

amount to about \$4,000,000 more; nevertheless, it seems next to impossible to save the business of the country from further serious expense and enormous embarrassment through delayed cases, or to preserve the employees of the government from danger to health and life by the construction of a new building which might be, and should be, immediately constructed. It seems unfortunate enough that the present state of affairs should exist; but it seems doubly so when it is considered that poor inventors taxed for the benefit of a country which they have done so much to aid are not permitted to even build for themselves a building in which their work can be carried on in a business-like way, promptly and efficiently and at their expense. We quote from the *Washington Star*:—

"There was an interesting debate on local public buildings in the Senate yesterday afternoon. Senator Carey offered a resolution, which was printed in *The Star*, in which the committee on public buildings and grounds was called upon to report upon the condition of government buildings, the necessity for new buildings, the probable cost of the latter and the amount now annually spent for rent by the government.

"Senator Allison stated the rental expenditure as about \$140,000 per annum. He did not object to the inquiry, but he thought it would do very little good. Everybody knew that public buildings were needed.

"Senator Hawley made several pertinent and forceful remarks as to the structurally dangerous and generally unhealthy condition of the government printing office.

"Senator Platt talked pointedly of the Patent Office. Said he: 'It is now at least eight years since I called the attention of the Senate to this matter. The difficulty has been increasing ever since. Although we have been taking business out of what is known as the Interior Department building, the danger, the overcrowding, the unhealthiness of that building have been increasing all the time, notwithstanding the room that has been made for the Patent Office. I said then, and I repeat now, that if there was a factory in the State of Connecticut where the employees were obliged to work under as unfavorable conditions as to health as the clerks in the Patent Office, the proprietors would be prosecuted and convicted under the laws of the State of Connecticut.'

"Senator Gray had been looking into the matter also. 'I had occasion,' said he, 'as a member of the committee on patents of this body, to visit the portion of the Patent Office building to which are assigned the documents and records which have made the tremendous weight that is jeopardizing the safety of that building, and though I expected to find some inconvenience there and a state of things which was very undesirable, I was not prepared to see what was exhibited to me, and I have felt ever since that there was a personal responsibility resting upon every member of this body and upon the co-ordinate body of Congress as long as that state of thing continues for the lives as well as for the health of those people who are compelled to labor there for their daily sustenance. I found a room there in which seventy or eighty ladies were performing their clerical duties, that was so stifling that a half-hour's visit to that room made me so glad to get into the fresh air that I should be very unwilling to go back there again and stay the same length of time.

"While we are waiting for the fire-proof building referred to, there is danger that some of these people may be asphyxiated in the interval, and I think, among all of the important

questions that are pressing upon the attention of Congress, there is none more important and exigent than attention to this matter which has been brought up by the senator from Connecticut. I do not believe we can afford to wait a single day in giving our attention to some method of relief. I understand from the report made by the secretary of the interior that the quantity of air to each individual in the part of the building where these ladies worked is about 400 cubic feet, whereas Dr. Billings, the best authority perhaps in the United States or in the world on sanitary matters of this kind, says that human life cannot be healthfully continued without something like 4,000 cubic feet to the individual. I asked the gentleman who has charge of that room how they managed to get along at all, and he said that at intervals of about two hours or an hour and a half they had to ask all these people to go out of the room — in winter time, of course — so that they might raise the windows in order to change the air; otherwise they could not get along as well as they do. That condition of things is shameful as well as deplorable, and I think some action ought to be taken at once in the interest of the human beings who are compelled by their necessities to perform their duties under such circumstances.' ”

#### THE STRUCTURE OF THE HEMIPTEROUS MOUTH.

Our knowledge of the mouth parts of the Hemiptera is given by Professor Comstock in his valuable “Introduction” as follows: “The mouth parts are formed for piercing and sucking. Without dissection they usually appear as a slender, jointed beak, arising at the base of a shorter, pointed labrum. This beak consists of four bristles inclosed in a fleshy jointed sheath. Two of the bristles represent the

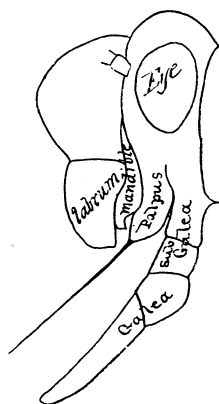


FIG. 1.

mandibles and two the maxillæ. The sheath is supposed to consist of the labium and grown-together labial palpi. This sheath is usually four jointed, and is never composed of more than that number of segments. The maxillary palpi are wanting.” The results of my studies in the Diptera, Hymenoptera and on the pupa of Cicada, lead me to disagree with this explanation, or homology, of the parts.

The head of a Cicada pupa when softened and cleaned so that all the parts are easily recognizable, shows four divisions, or sclerites, forming the lateral margin of the head inferiorly. In Fig. 1 the sclerites are shown, pried apart for convenience of recognition, and without attempt at any but diagrammatic result. The anterior of the sclerites is the labrum, covering the base of the mouth, and normally appressed so close to the beak that the intervening structures are

not visible. Behind the labrum and normally closely united to it is the mandibular sclerite, which has not been heretofore recognized, but which is exactly where it should be, compared with a mandibulate mouth. From the side this sclerite gives a mere indication of its character and from the firmness of the union shows that the mandibles are not mobile and therefore not functional. Cutting along the posterior suture of the mandible and then straight across so as to get

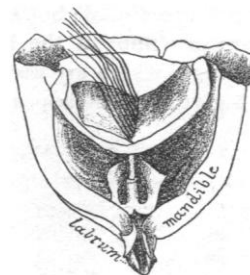


FIG. 2.

the whole of the labrum, we get from behind the view shown in Fig. 2. Here the mandibles show as elongated flattened strips, quite chitinous in texture toward the tips, which latter are acute and somewhat beak-like, divergent. The extremities lie so close to the pointed tip of the labrum that they are invisible from the side. In the cavity between the mandibular sclerite and the front of the labrum there is at least one large gland, probably that secreting the irritating fluid which many bugs inject into the punctures made by the beak. From this gland a distinct duct leads to the pointed

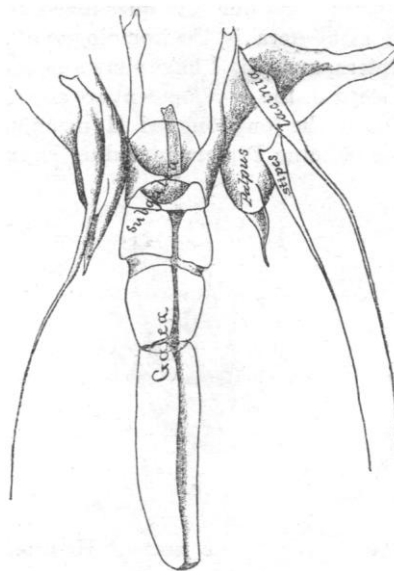


FIG. 3.

tip of the labrum behind and between two chitinous wings giving muscular attachments. In *Belostoma* the labrum is extended so as to cover the beak for half its length. Here there is a salivary gland behind the clypeus, the duct extending to the tip of the labrum and then apparently discharging into the beak. In some species the labrum is set inwardly with a coating of very fine, dense hair, giving a velvety surface, and this, as Dr. Packard has shown is the epipharynx. It is not present in the Cicada pupa. The sclerite next behind the mandibular ring is that from which arise the two bristles that are usually homologized with the mandible and